



Final Biweekly Nebraska Arbovirus Surveillance Report, 2015

(All data are preliminary and may change as more data is received)

State Summary:

Protocol: Historically the Nebraska Public Health Lab (NPHL) has tested Culex mosquitoes for West Nile Virus (WNV) using a reverse transcriptase PCR (RT-PCR) assay. Starting this season NPHL will test Culex mosquitoes for St. Louis Encephalitis Virus (SLE) and Western Equine Encephalitis Virus (WEE) in addition to WNV using a multiplex PCR assay.

Remarks: Due to test kit supply problems, mosquito pool testing was temporarily suspended for several weeks until test kit supplies were again made available. As a result, the biweekly test results/reports were also temporarily suspended. All mosquito pools have now been tested and this report is the final biweekly report for the 2015 WNV season and provides a summary of all the mosquito test data for the 2015 season. For the 2015 WNV season a total of 3,717 pools consisting of 113,628 Culex mosquitoes were submitted for testing. Of the 3,717 pools tested for the season **103 WNV positive pools** were detected. ***The number of WNV positive pools detected for the season decreased by 58.5% compared to the previous 2014 season while the 2015 statewide MIRs and VIs were also substantially less with a 75% and 58.9% decrease respectively compared to 2014.*** This current data suggests that this will be a less intense human WNV season in terms of overall number of human cases compared to the three previous seasons.

Four SLE positive were also detected from the 3,717 submitted pools for 2015, three of the four pools came from Scotts Bluff County and one from Sheridan County. The virus is endemic to Nebraska and has caused periodic outbreaks in the past but is much rarer than WNV. The virus cycle is very similar to WNV where birds are the primary reservoir host and humans are dead-end hosts. Disease is also similar to WNV with most people displaying no symptoms or illness (<1%). However people who do show symptoms tend to display fever, headache, nausea, vomiting, and tiredness. Severe neuroinvasive disease (such as encephalitis) can occur and is more common in older adults. As with WNV there is no specific treatment, care is based on symptoms. For more information on SLE please visit the Centers for Disease Control website (CDC) at <http://www.cdc.gov/sle/>. No positive pools for WEE virus was detected during 2015. All data are preliminary and surveillance results are subject to change. For the most up-to-date numbers on mosquito positive pools visit the Nebraska Department of Health and Human Services West Nile Virus website at: <http://dhhs.ne.gov/wnv>.

The below tables summarize the tested pools for the season. Minimum infection rate (MIR) reported per 1,000 Culex and vector index (VI) are two tools that can be used in assessing the WNV transmission risk. Minimum infection rate is calculated by taking the number of positive pools detected and dividing it by the total number of Culex mosquitoes collected. This proportion is then multiplied by 1,000 to get the MIR per 1,000 Culex mosquitoes. Vector index is calculated by taking the MIR as a proportion and multiplying it by the average number of Culex per trap night collected. Generally, the higher the values for MIR and VI, the greater the potential risk for WNV transmission.

However, it is important to note that there are many factors that also come into play in determining an individual person's risk of acquiring WNV and that MIR and VI are not definitive tools. They are implements that we can use to try and determine high WNV activity and potentially greater risk of WNV infection. **Low WNV activity or no WNV positives detected DOES NOT mean NO RISK!** Anytime mosquitoes are active there is always the possibility of acquiring WNV or another mosquito-borne arbovirus and proper mosquito prevention methods should be utilized. So help fight the bite!

As of October 13, 2015 **57 positive human** WNV clinical cases along with **24 blood donors** have been identified at this time. There have been **two** birds to test positive for WNV and no equine WNV cases to report at this time.

Figure 1. West Nile virus (WNV) activity reported to ArboNET, by state — United States, 2015 (as of October 13, 2015)

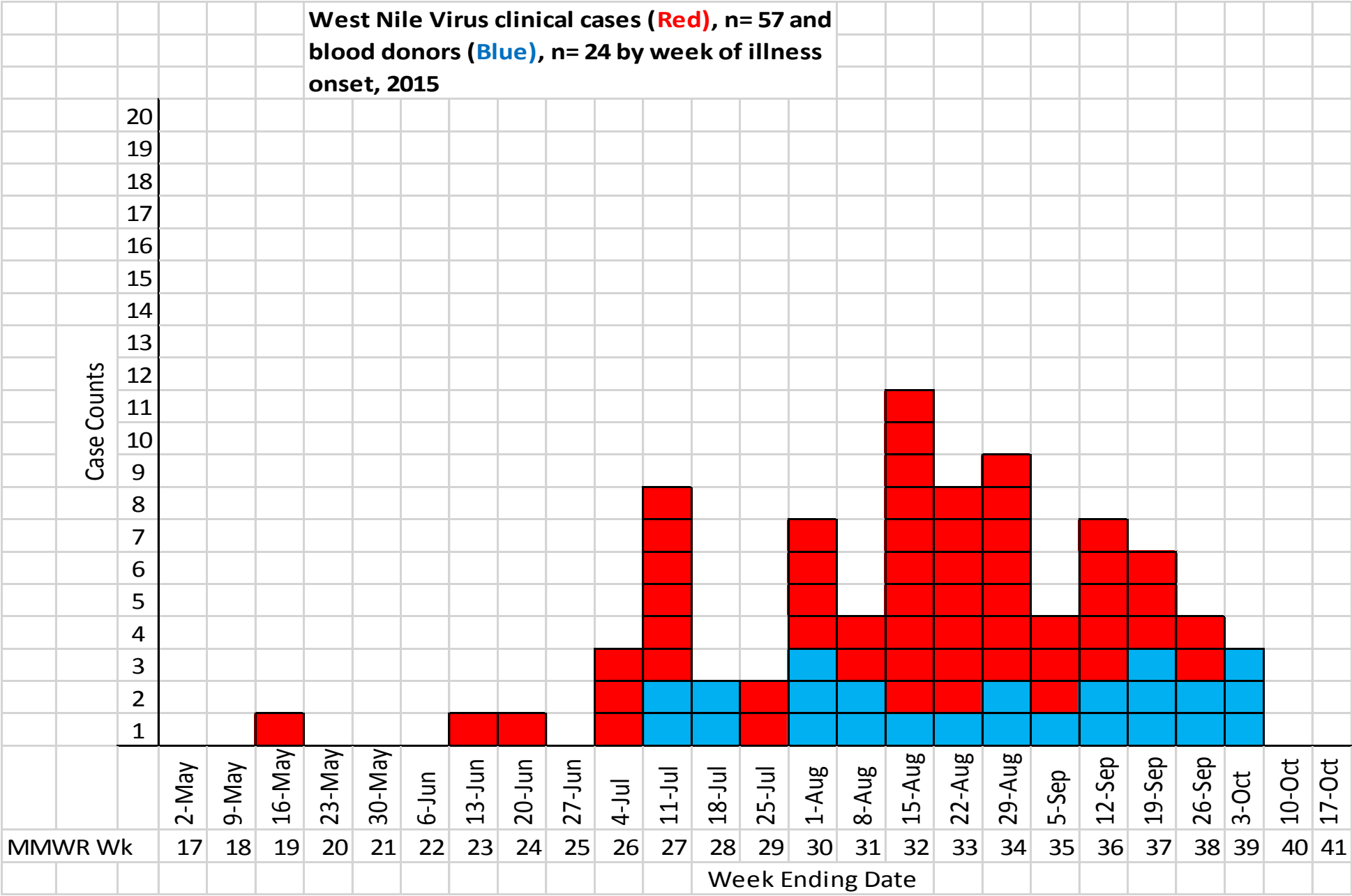


*WNV human disease cases or presumptive viremic blood donors. Presumptive viremic blood donors have a positive screening test which has not necessarily been confirmed.

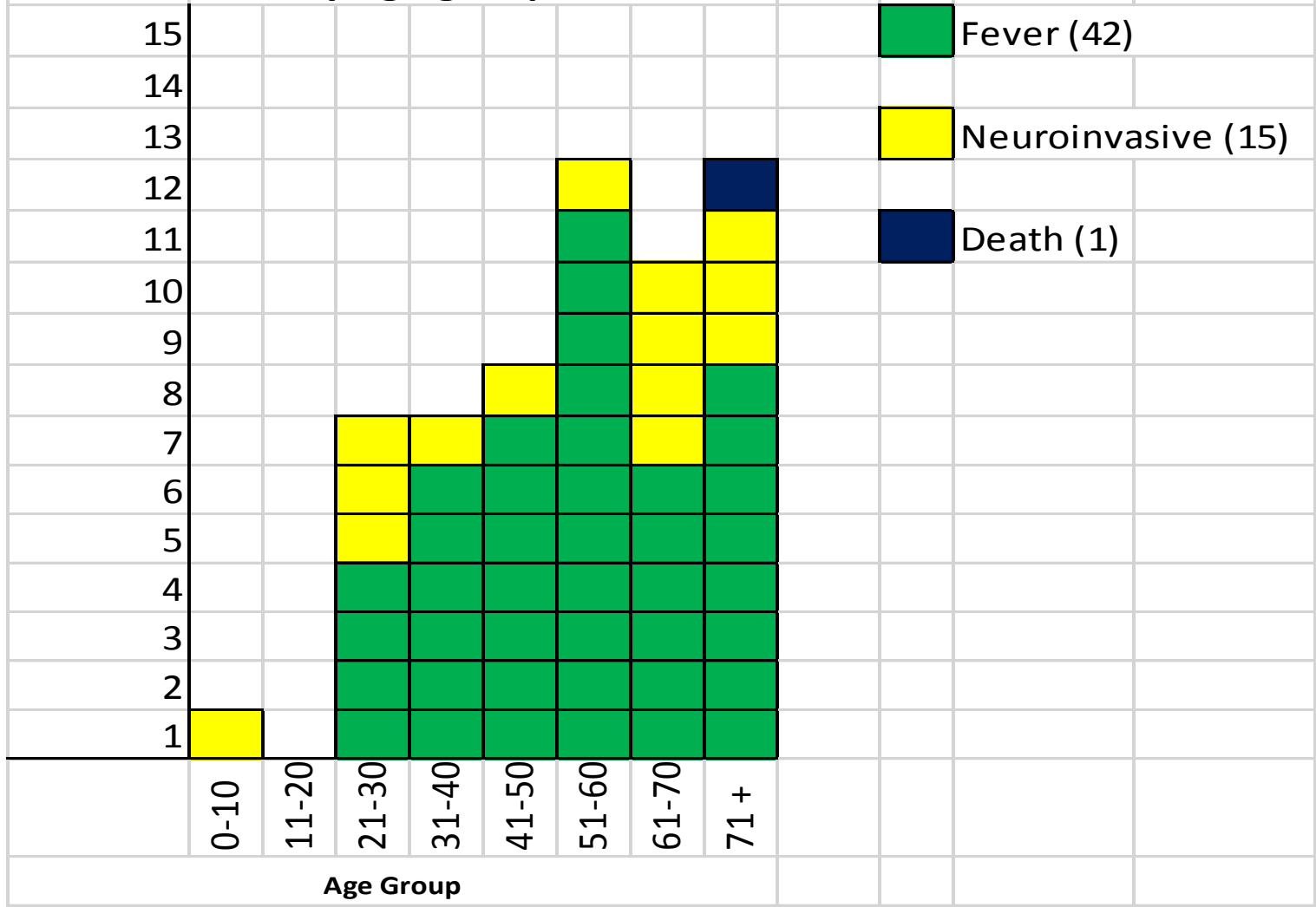
†WNV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

0.0
0.01 - 0.24
0.25 - 0.49
0.50 - 0.99
≥1.00

Maps Courtesy of CDC



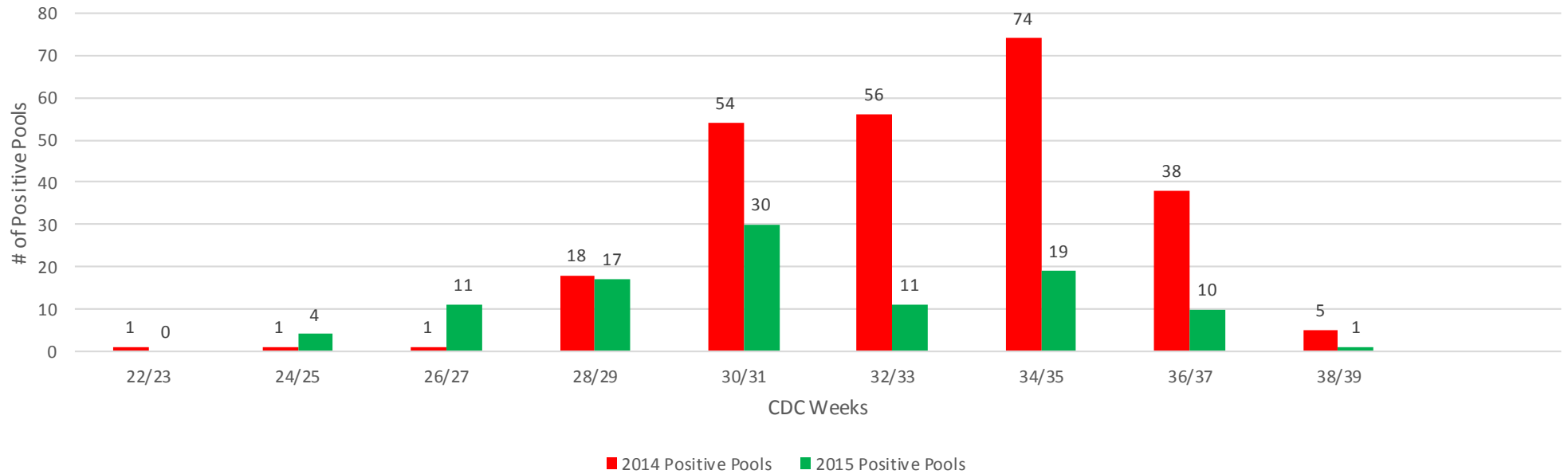
**West Nile Virus clinical cases,
by age group, 2015**



Cumulative 2015 Nebraska County WNV Mosquito Test Results

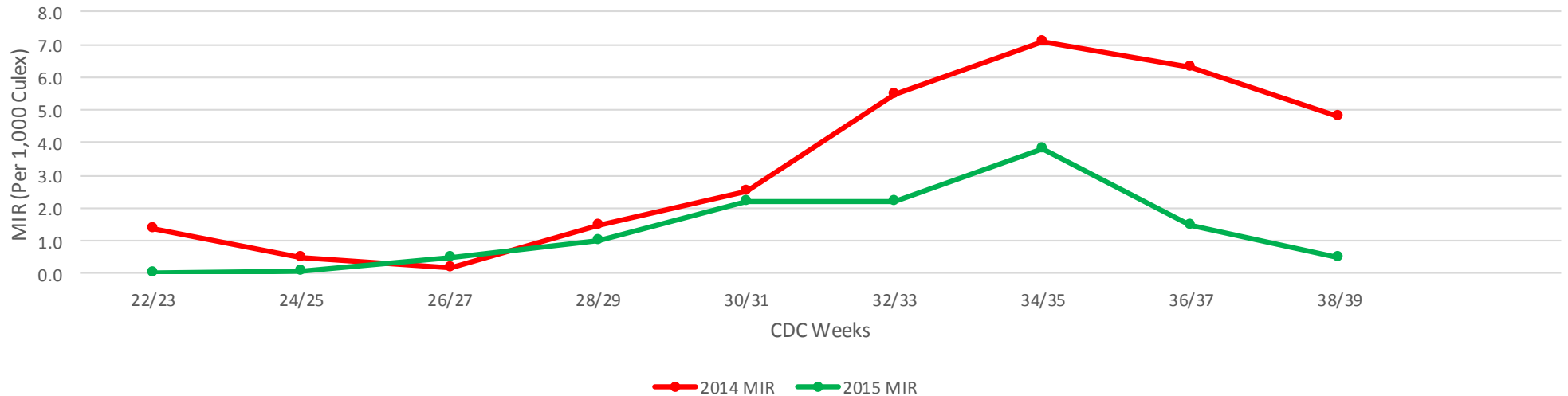
County	WNV Positive Pools	Pools Submitted	Pools Tested	Trap Nights	Avg. Culex/Trap Night	Infection Rate/1000	Weekly VI	% Pos. Pools
Buffalo	0	110	110	51	2.0	0.0	0.000	0.0
Butler	1	35	35	9	120.4	0.9	0.111	2.9
Chase	0	79	79	46	41.4	0.0	0.000	0.0
Cherry	2	171	171	54	125.3	0.3	0.037	1.2
Dawes	9	433	433	54	349.5	0.5	0.167	2.1
Dawson	7	107	107	52	45.3	3.0	0.135	6.5
Dixon	1	41	41	27	8.2	4.5	0.037	2.4
Dodge	1	77	77	52	17.1	1.1	0.019	1.3
Douglas	1	86	86	52	15.4	1.2	0.019	1.2
Garden	5	162	162	54	118.6	0.9	0.093	3.1
Garfield	1	79	79	54	19.8	0.9	0.019	1.3
Hall	3	96	96	53	33.6	1.7	0.057	3.1
Holt	1	105	105	52	56.1	0.3	0.019	1.0
Jefferson	0	119	119	53	33.8	0.0	0.000	0.0
Lancaster	0	142	142	53	55.5	0.0	0.000	0.0
Lincoln	8	171	171	54	92.5	1.6	0.148	4.7
Madison	4	110	110	54	25.7	2.9	0.074	3.6
Phelps	0	77	77	54	12.2	0.0	0.000	0.0
Platte	4	133	133	45	83.1	1.1	0.089	3.0
Polk	6	32	32	9	90.3	7.4	0.667	18.8
Red Willow	1	76	76	51	29.8	0.7	0.020	1.3
Richardson	4	316	316	54	205.7	0.4	0.074	1.3
Scottsbluff	17	339	339	54	261.0	1.2	0.315	5.0
Seward	0	26	26	9	41.6	0.0	0.000	0.0
Sheridan	24	424	424	54	357.8	1.2	0.444	5.7
Wayne	1	49	49	27	13.2	2.8	0.037	2.0
Webster	2	98	98	53	42.2	1.0	0.038	2.0
York	0	24	24	9	47.2	0.0	0.000	0.0
2015 Cumulative State Wide Total	103	3717	3717	1243	91.4	0.9	0.083	2.8
2014 Cumulative State Wide Total	248	2679	2679	1228	56.2	3.6	0.202	9.3

2014 and 2015 Biweekly WNV Positive Pools Comparison



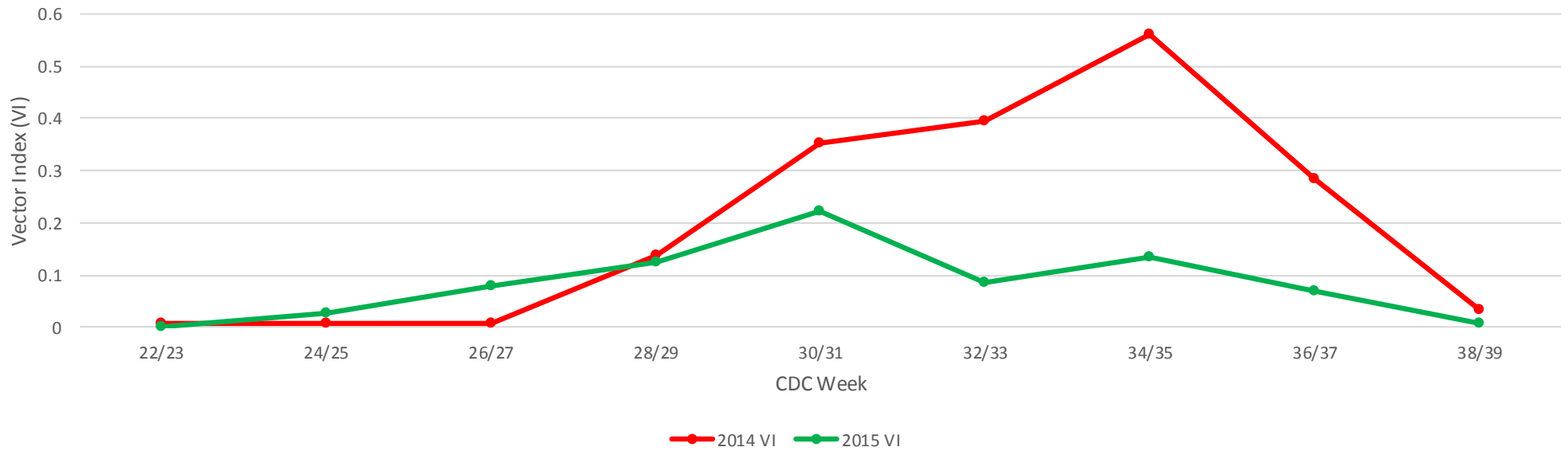
Comparison of 2014 Biweekly WNV Positive Pools to 2015 Season Data.

2014 and 2015 Biweekly WNV MIR Comparison



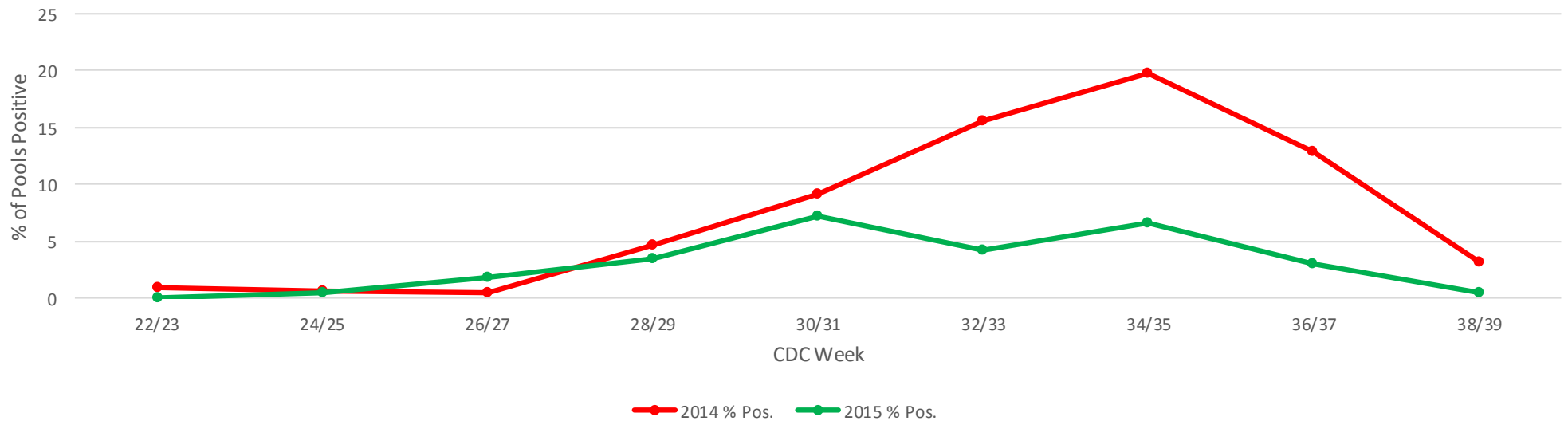
Comparison of 2014 Biweekly WNV MIR to 2015 Season Data.

2014 and 2015 Biweekly WNV Vector Index (VI) Comparison



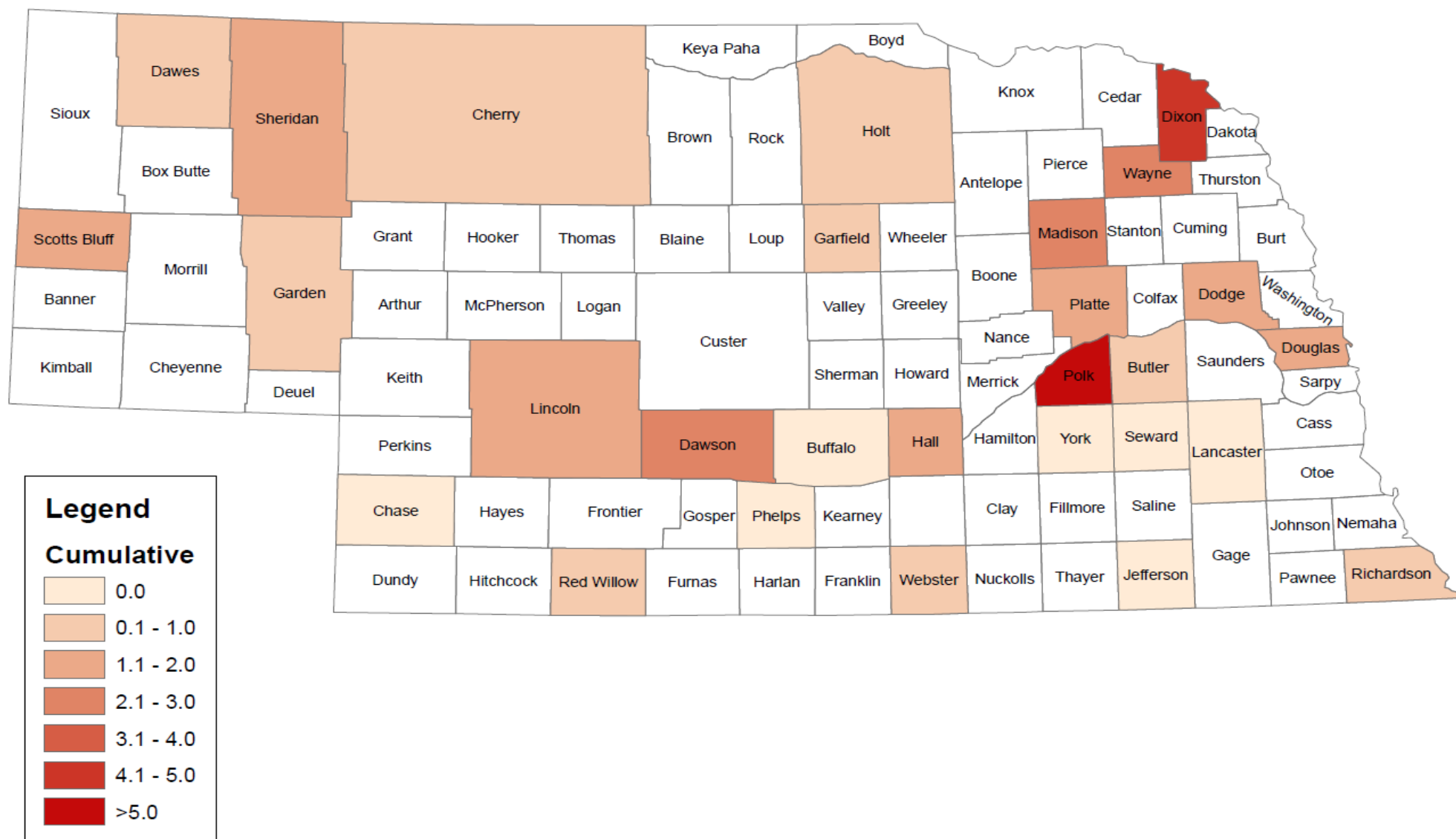
Comparison of 2014 Biweekly WNV Vector Index (VI) to 2015 Season Data.

2014 and 2015 Biweekly Percent of WNV Pools Positive



Comparison of 2014 Biweekly Percent of WNV Pools Testing Positive to 2015 Season Data.

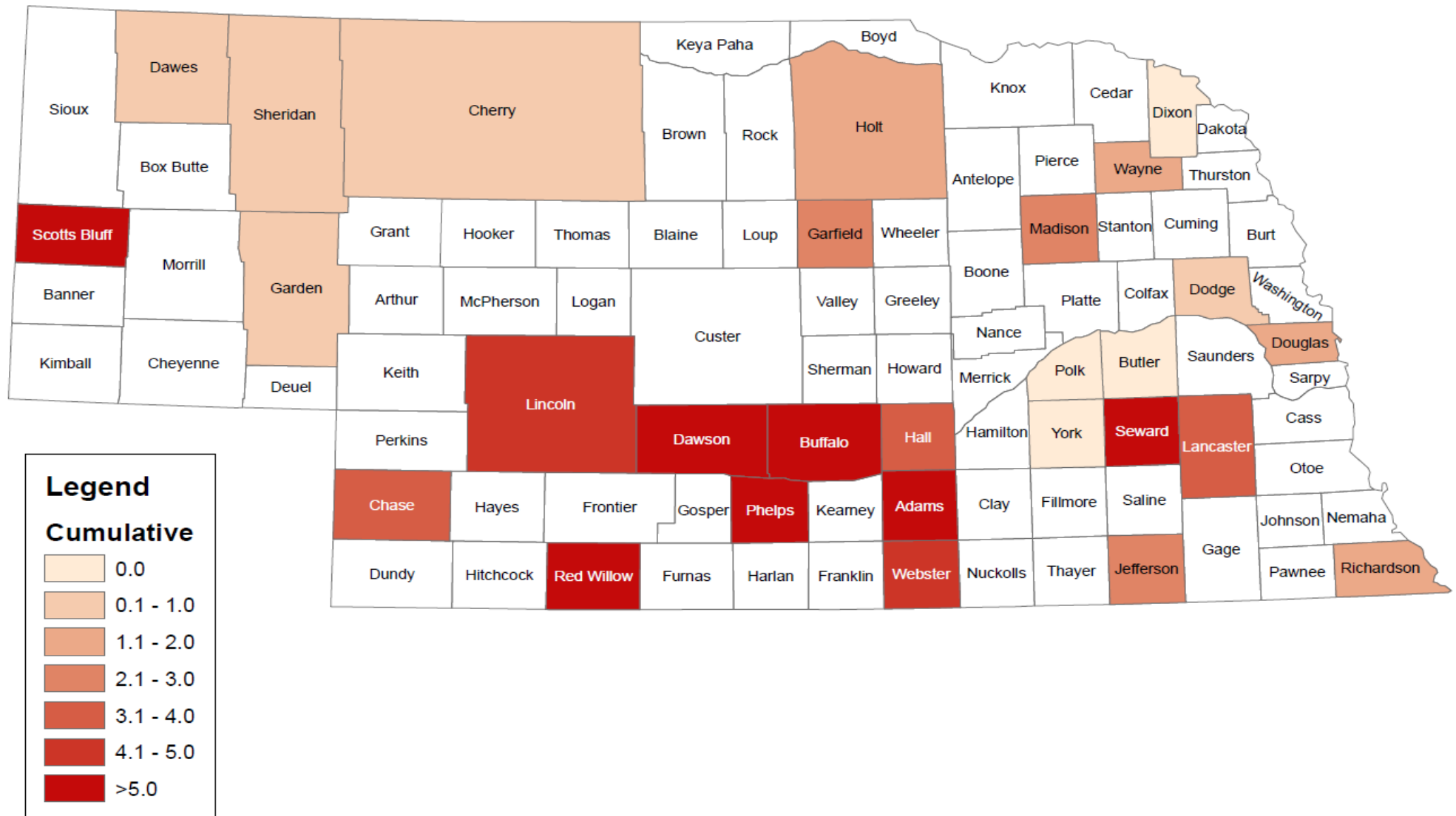
2015 Nebraska Cumulative Mosquito Minimum Infection Rates



2015 Cumulative Nebraska Mosquito WNV Minimum Infection Rate (MIR) by County.

Note: 28 Counties are participating in the 2015 Nebraska WNV mosquito surveillance season.

2014 Cumulative Nebraska Mosquito Minimum Infection Rates



Last Season's (2014) Cumulative Nebraska Mosquito WNV Minimum Infection Rate (MIR) by County.

Note: 28 Counties participated in the 2014 Nebraska WNV mosquito surveillance season.

ST. LOUIS ENCEPHALITIS VIRUS SURVEILLANCE

Cumulative 2015 Nebraska County SLE Mosquito Test Results

County	SLE Positive Pools	Pools Submitted	Pools Tested	Trap Nights	Avg. Culex/Trap Night	Infection Rate/1000	Weekly VI	% Pos. Pools
Buffalo	0	110	110	51	2.0	0.0	0.000	0.0
Butler	0	35	35	9	120.4	0.0	0.000	0.0
Chase	0	79	79	46	41.4	0.0	0.000	0.0
Cherry	0	171	171	54	125.3	0.0	0.000	0.0
Dawes	0	433	433	54	349.5	0.0	0.000	0.0
Dawson	0	107	107	52	45.3	0.0	0.000	0.0
Dixon	0	41	41	27	8.2	0.0	0.000	0.0
Dodge	0	77	77	52	17.1	0.0	0.000	0.0
Douglas	0	86	86	52	15.4	0.0	0.000	0.0
Garden	0	162	162	54	118.6	0.0	0.000	0.0
Garfield	0	79	79	54	19.8	0.0	0.000	0.0
Hall	0	96	96	53	33.6	0.0	0.000	0.0
Holt	0	105	105	52	56.1	0.0	0.000	0.0
Jefferson	0	119	119	53	33.8	0.0	0.000	0.0
Lancaster	0	142	142	53	55.5	0.0	0.000	0.0
Lincoln	0	171	171	54	92.5	0.0	0.000	0.0
Madison	0	110	110	54	25.7	0.0	0.000	0.0
Phelps	0	77	77	54	12.2	0.0	0.000	0.0
Platte	0	133	133	45	83.1	0.0	0.000	0.0
Polk	0	32	32	9	90.3	0.0	0.000	0.0
Red Willow	0	76	76	51	29.8	0.0	0.000	0.0
Richardson	0	316	316	54	205.7	0.0	0.000	0.0
Scottsbluff	3	339	339	54	261.0	0.2	0.056	0.9
Seward	0	26	26	9	41.6	0.0	0.000	0.0
Sheridan	1	424	424	54	357.8	0.1	0.003	0.2
Wayne	0	49	49	27	13.2	0.0	0.000	0.0
Webster	0	98	98	53	42.2	0.0	0.000	0.0
York	0	24	24	9	47.2	0.0	0.000	0.0
2015 Cumulative State Wide Total	4	3717	3717	1243	91.4	0.04	0.003	0.1

WESTERN EQUINE ENCEPHALITIS VIRUS SURVEILLANCE

Cumulative 2015 Nebraska County WEE Mosquito Test Results

County	WEE Positive Pools	Pools Submitted	Pools Tested	Trap Nights	Avg. Culex/Trap Night	Infection Rate/1000	Weekly VI	% Pos. Pools
Buffalo	0	110	110	51	2.0	0.0	0.000	0.0
Butler	0	35	35	9	120.4	0.0	0.000	0.0
Chase	0	79	79	46	41.4	0.0	0.000	0.0
Cherry	0	171	171	54	125.3	0.0	0.000	0.0
Dawes	0	433	433	54	349.5	0.0	0.000	0.0
Dawson	0	107	107	52	45.3	0.0	0.000	0.0
Dixon	0	41	41	27	8.2	0.0	0.000	0.0
Dodge	0	77	77	52	17.1	0.0	0.000	0.0
Douglas	0	86	86	52	15.4	0.0	0.000	0.0
Garden	0	162	162	54	118.6	0.0	0.000	0.0
Garfield	0	79	79	54	19.8	0.0	0.000	0.0
Hall	0	96	96	53	33.6	0.0	0.000	0.0
Holt	0	105	105	52	56.1	0.0	0.000	0.0
Jefferson	0	119	119	53	33.8	0.0	0.000	0.0
Lancaster	0	142	142	53	55.5	0.0	0.000	0.0
Lincoln	0	171	171	54	92.5	0.0	0.000	0.0
Madison	0	110	110	54	25.7	0.0	0.000	0.0
Phelps	0	77	77	54	12.2	0.0	0.000	0.0
Platte	0	133	133	45	83.1	0.0	0.000	0.0
Polk	0	32	32	9	90.3	0.0	0.000	0.0
Red Willow	0	76	76	51	29.8	0.0	0.000	0.0
Richardson	0	316	316	54	205.7	0.0	0.000	0.0
Scottsbluff	0	339	339	54	261.0	0.0	0.000	0.0
Seward	0	26	26	9	41.6	0.0	0.000	0.0
Sheridan	0	424	424	54	357.8	0.0	0.000	0.0
Wayne	0	49	49	27	13.2	0.0	0.000	0.0
Webster	0	98	98	53	42.2	0.0	0.000	0.0
York	0	24	24	9	47.2	0.0	0.000	0.0
2015 Cumulative State Wide Total	0	3717	3717	1243	91.4	0.0	0.000	0.00